In the Claims:

Claims 1 to 15 (Canceled).

1   16.   (Currently amended) Method for milling a freeform surface
2   on a workpiece using a milling machine, whereby the
3   workpiece is milled by a tool of the milling machine such
4   that a desired freeform surface is formed, and to carry out
5   the milling the tool is moved relative to the workpiece
6   along a tool path defined by splines whereby the motion of
7   the tool is controlled based on the splines, characterized
8   in that the splines are calculated as polynomials directly
9   from ~~support~~ control points stored in workpiece coordinates
10   or in machine coordinates in a CAD/CAM system, and the tool
11   path is generated from six splines if the ~~support~~ control
12   points are defined in workpiece coordinates, and is
13   generated from five splines if the ~~support~~ control points
14   are defined in machine coordinates, whereby one independent
15   spline is produced for each coordinate.

1   17.   (Previously presented) Method according to claim 16,
2   characterized in that, for each tool path, the splines are
3   calculated through the use of one or more interpolation
4   parameters which are equal for all of the splines of the
5   respective tool path, so that all of the splines of the
6   respective tool path are synchronized with one another.

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1   **18.**   (Currently amended) Apparatus for milling a freeform
2   surface on a workpiece, whereby a tool is adapted to mill
3   the workpiece in such a manner so that a desired freeform
4   surface is formed, comprising a programming arrangement
5   (21) for programming a tool path, and comprising at least
6   one control arrangement (28) for controlling a motion of
7   the tool relative to the workpiece along the tool path
8   defined by splines, characterized in that the programming
9   arrangement (21) is embodied as a CAD/CAM system, and
10   further comprising means (25) allocated to the programming
11   arrangement (21) and adapted to calculate the splines
12   as polynomials directly from support control points stored
13   in workpiece coordinates or machine coordinates in the
14   CAD/CAM system in such a manner so that the means (25) are
15   adapted to generate the tool path from six splines if the
16   support control points are defined in workpiece
17   coordinates, and from five splines if the support control
18   points are defined in machine coordinates, whereby an
19   independent spline is produced for each coordinate, and
20   wherein the CAD/CAM system is adapted to produce at least
21   one APT file (22), and further comprising at least one
22   downstream-connected post-processor (26) adapted to convert
23   the at least one APT file into at least one control file
24   (27) that is executable by the or each control arrangement
25   (28), and whereby the or each control arrangement (28) is
26   adapted to control the motion of the tool along the tool
27   path based on and in accordance with the splines.

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1   **19.**   (Previously presented) Apparatus according to claim 18,

2   further comprising an APT processor (23), characterized in

3   that the means (25) allocated to the programming

4   arrangement (21) are arranged and adapted to transfer the

5   splines to the APT processor (23) which is arranged and

6   adapted to transfer the splines to the or each

7   post-processor (26), whereby the or each post-processor

8   (26) is arranged and adapted to provide the splines to the

9   or each control arrangement (28) in a polynomial format.

1   **20.**   (Currently amended) A method of milling a freeform surface

2   on a workpiece using a miller tool, comprising the steps:

3   a)   defining tool path [[way]] control points, each

4   respectively in six workpiece coordinates or five

5   machine coordinates, wherein said [[way]] control

6   points define points within tolerance limits along a

7   contour of a nominal freeform surface that is to be

8   milled;

9   b)   generating a plurality of splines as polynomials

10   directly dependent on and fitting said [[way]] control

11   points sufficiently closely to remain within said

12   tolerance limits of said contour, wherein a respective

13   independent one of said splines is respectively

14   generated for each one of said workpiece coordinates

15   or said machine coordinates of all of said [[way]]

16   control points, so that said plurality of splines

17   includes a total of six splines respectively allocated

18   to said six workpiece coordinates if said [[way]]

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19   control points are defined in said six workpiece

20   coordinates, and said plurality of splines includes a

21   total of five splines respectively allocated to said

22   five machine coordinates if said [[way]] control

23   points are defined in said five machine coordinates;

24   and

25 c) moving said miller tool in contact with and relative

26   to said workpiece so that said miller tool mills said

27   workpiece, and controlling said moving of said miller

28   tool directly based on and in accordance with said

29   plurality of splines as polynomials respectively

30   allocated to said workpiece coordinates or said

31   machine coordinates so that said miller tool moves

32   along a tool path defined by said splines

33   as polynomials in said workpiece coordinates or said

34   machine coordinates and thereby mills an actual

35   freeform surface on said workpiece within said

36   tolerance limits of said contour of said nominal

37   freeform surface.

1   21. (Currently amended) An apparatus for milling a freeform

2   surface on a workpiece, comprising:

3   a movable miller tool that is movable relative to the

4   workpiece;

5   plural control arrangements respectively adapted to

6   control a motion of said miller tool respectively in six

7   workpiece coordinates or in five machine coordinates;

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8   a programming arrangement programmed to define tool

9   path [[way]] control points in said six workpiece

10   coordinates or in said five machine coordinates, wherein

11   said [[way]] control points define points within tolerance

12   limits along a contour of a nominal freeform surface that

13   is to be milled;

14   a processing arrangement that is interposed between

15   said programming arrangement and said control arrangements,

16   and that is adapted and programmed to generate a plurality

17   of splines as polynomials directly dependent on and fitting

18   said [[way]] control points sufficiently closely to remain

19   within said tolerance limits of said contour, wherein a

20   respective independent one of said splines is respectively

21   to be generated for each one of said workpiece coordinates

22   or said machine coordinates of all of said [[way]] control

23   points, so that said plurality of splines includes a total

24   of six splines respectively allocated to said six workpiece

25   coordinates if said [[way]] control points are defined in

26   said six workpiece coordinates, and said plurality of

27   splines includes a total of five splines respectively

28   allocated to said five machine coordinates if said [[way]]

29   control points are defined in said five machine

30   coordinates; and

31   wherein said control arrangements are adapted to

32   control the motion of said miller tool directly based on

33   and in accordance with said plurality of splines

34   as polynomials respectively allocated to said workpiece

35   coordinates or said machine coordinates so that said miller

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36   tool is adapted to move along a tool path defined by said

37   splines <u>as polynomials</u> in said workpiece coordinates or

38   said machine coordinates and thereby to mill an actual

39   freeform surface on said workpiece within said tolerance

40   limits of said contour of said nominal freeform surface.

[RESPONSE CONTINUES ON NEXT PAGE]

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